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Aguaytia Energy Group

Perú Gas Market Opportunities

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1. Peru – Energy Situation

- Peru is a South-American country which has a population of 25.7 million inhabitants polarized with 7.4 million living in the greater Lima area, the country's capital.
- In year 2000, Peru had a US\$ 700 million commercial energy deficit.
- Principal imported energy sources are crude oil, mineral coal and diesel.
- In year 2000, Perú imported 45,686 b.o.e./day of crude oil (34% of its actual demand) and 9,064 b.o.e./day of Mineral Coal (98% of its actual demand).



1. Peru – Energy Situation

- Crude Oil is refined to obtain Leaded Gasoline, Lead-Free Gasoline, Diesel and Fuel Oil.
- Current natural gas production is 20,158 b.o.e./day. However 16,267 b.o.e./day are reinjected back into field due to lack of gas markets.
- Peru has undeveloped gas reserves (Camisea) which are in the process of being developed in excess of 12 TCF (commercial start up 2004). The major markets for the Camisea gas are Lima and Southern California.





Energy Sources of Peru – Year 2000

PRIMARY ENERGY USAGE	b.o.e/day	%
Commercial Energy		
Crude Oil	117,547	55.7%
Diesel	47,940	22.7%
Gasoline	21,514	10.2%
Fuel Oil	28,882	13.7%
Kerosene - Jet	19,211	9.1%
Natural Gas	3,891	1.8%
LPG	8,827	4.2%
Mineral Coal	7,141	3.4%
Electricity (Hydropower + Thermal)	27,920	13.2%
Sub-Total of Commercial Energy	165,326	78.3%
Non Commercial Energy		
Firewood and Equivalents	40,541	19.2%
Solar Energy	993	0.5%
Sub-Total of Non Commercial Energy	41,534	19.7%
Others	4,284	2.0%
TOTAL PRIMARY ENERGY	211,144	100.0%

b.o.e. = barrel of oil equivalent

2. Peru – Energy Uses

- Peru is reaching contamination levels of the major cities in the hemisphere (Los Angeles, Mexico, Santiago and Sao Paulo) where health conditions and “Global Warming” conditions are reaching emergency levels.
- All cities mentioned including Lima have contamination levels higher than the recommended international standards. The major contaminants are “Leña” (firewood), Diesel, Fuel Oil and Leaded Gasoline.
- Leña and its equivalents (bosta, yareta, bagazo) are used in residential and industrial market in the jungle area (for wood drying applications).



2. Peru – Energy Uses

- Diesel and Leaded gasoline are used for automotive market and its contamination levels are critical.
- These energy sources produce contaminants due to its poor combustion efficiency. The major contaminants produced by these fuels are CO, CO₂, NO_x, SO_x, and particular matters.
- On the other hand, natural gas is much more efficient and its contamination level is minimum compared with these other fuels used currently in the Peruvian market.



3. Peru - Natural Gas Pilot Projects

- Nowadays, The Aguaytia Gas Field is the principal gas reserve exploited in Peru.
- Aguaytia Energy is developing the first natural gas projects. These are “pilot projects” and their results and experiences will be applied in the future Camisea Gas Project.
- Aguaytia Energy’s Pilot Projects:
 - (1) City Gas Distribution System - Pucallpa.
 - (2) Vehicle fueled with LPG - Iquitos.
 - (3) Vehicle fueled with CNG - Pucallpa.



4. Peru – Potential Natural Gas Uses

- Natural Gas use would change the energy sources providing lower energy costs, less global warming effects and improved environmental and health conditions.
- Residential Fuel Market via gas pipeline city distribution systems would reduce the use of “Leña” and Kerosene.
 - a. Today: “Leña” and Kerosene
 - b. Tomorrow: Natural Gas
- Industrial Fuel Market via city pipeline distribution would reduce the use of “Leña”, Fuel Oil and Diesel.
 - a. Today: “Leña”, Fuel Oil & Diesel
 - b. Tomorrow: Natural Gas & LPG



4. Peru – Potential Natural Gas Uses

- **Vehicle Fuel Market would reduce the use of Diesel and Leaded Gasoline.**
 - a. **Today: Diesel & Leaded Gasoline**
 - b. **Tomorrow: LPG & Compressed Natural Gas**



5. LPG “Mototaxis” - Iquitos, Peru

- Results from the Aguaytia Energy’s Pilot Project related to convert mototaxis fueled by Leaded Gasoline to LPG usage are satisfactory.
- This project will generate social, economic and environment benefits for Iquitos.
- The project should generate new business opportunities for independent investor (conversion workshops, spare parts manufacturing, etc.)



5. LPG “Mototaxis” - Iquitos, Peru





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